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RECENT CHANGES IN THE DOUBLE STAR OΣ 341.

I have recently examined OΣ 341 on three good nights with the 36-inch telescope without obtaining any indication of its being double. This result was wholly unexpected. All the measures of the star from the first ones in 1846, to the last ones in 1886, are in fairly good agreement in indicating that the components are relatively fixed. Previous observers have generally estimated the magnitudes the same, 7.0 or 7.5, and the average of the distances given by the measures from 1846 to 1886 is between 0″.4 and 0″.5. At this distance, on a good night, the star would be an easy object for the large telescope. The star has closed up since 1886, and this shows that the motion since that time has been rapid. It also proves that the star is a binary, and it is not difficult to imagine such a disposition of the elements of its orbit as will account for the apparent fixity of the components during the period mentioned. For illustration, if we arbitrarily assume the following system of elements:—

$$T = 1898.33$$
$$\Omega = 90^\circ$$
$$\omega = 90^\circ$$
$$i = 90^\circ$$
$$e = 0.75$$
$$a = 0''.75$$
$$\mu = 1^\circ.5$$

Period, 240 years;

and compute the positions for the dates of observation and compare them with the observed places, we shall obtain the residuals given in connection with the observations below. The observations that I have found are as follows:—

Date.	Position angle.	Distance.	No. of nights.	Residuals. O—C		Observer.
1846.09	93°.0	0″.53	3	+ 3°.0	+ 0″.09	OTTO STRUVE
1852.27	95 .5	0 .52	3	+ 5 .5	+ 0 .05	OTTO STRUVE
1866.32	88 .5	0 .6 est.	3, 1	− 1 .5	+ 0 .10	DEMBOWSKI
1871.61	90 .7		3, 0	+ 0 .7		DEMBOWSKI
1878.28	84 .0	0 .38	3	− 6 .0	− 0 .09	SCHIAPARELLI
1883.64	91 .4	0 .40	3	+ 1 .4	− 0 .02	PERROTIN
1884.55	91 .2	0 .45	3	+ 1 .2	+ 0 .04	PERROTIN
1886.39	86 .3	0 .52	7	− 3 .7	+ 0 .21	ENGELMANN
1898.32	Single.		3	0 .0	0 .00	HUSSEY

It may be noted that DEMBOWSKI, SCHIAPARELLI and ENGELMANN observed with small telescopes, of 7½ and 8 inches aperture, and that the star must have been very difficult for them. DEMBOWSKI did not measure the distance, and estimated it on one night only. SCHIAPARELLI'S largest position-angle differs $17^\circ.8$ from his smallest, and ENGELMANN'S largest $30^\circ.7$ from his smallest. These discordances bear witness to the difficulty of the star for these observers, and may account for the magnitude of some of the residuals given above.

It is evident that no reliable system of elements for this star can now be obtained. The necessary data for the determination of the orbit does not exist. It will be necessary to wait, at least, until the star becomes measurable again. The elements above are given merely to show that the long period of apparent fixity of the components and their present closeness or singleness are not incompatible, but that they find a ready explanation in the binary character of the star. W. J. HUSSEY.

May 24, 1898.

NEW ELEMENTS OF COMET *b* 1898, (PERRINE).

From my observations of March 21st, April 8th, and April 22d, I have computed the following elements of this comet:—

$$T = 1898 \text{ March } 17.37195 \text{ Gr. M. T.}$$

$$\left.\begin{array}{rl} \omega = & 47^\circ\ 37'\ \ 6''.2 \\ \Omega = & 262\ \ 33\ \ \ 5\ .7 \\ i = & 72\ \ 26\ \ 56\ .1 \end{array}\right\} \text{Ecliptic and Mean Equinox of 1898.0.}$$

$$\log q = 0.040916$$

$$\text{O—C: } \Delta\lambda' \cos\beta' = -4''.2, \quad \Delta\beta' = +12''.4$$

From the same observations I also computed three other systems of elements, using different values of the ratio of the curtate distances. The four systems of elements are nearly the same. The residuals given above cannot be materially improved; their ratio may be changed, but the sum of their squares cannot be sensibly diminished. A careful examination of the data does not reveal any error to which the magnitude of the residuals may be attributed. These circumstances, taken in connection with the fact that the comet has a well-defined nucleus, making accurate observations of it comparatively easy, lead to the conclusion that the true elements of the orbit are not parabolic. W. J. HUSSEY.

April 28, 1898.